# इंटरनेट मानक

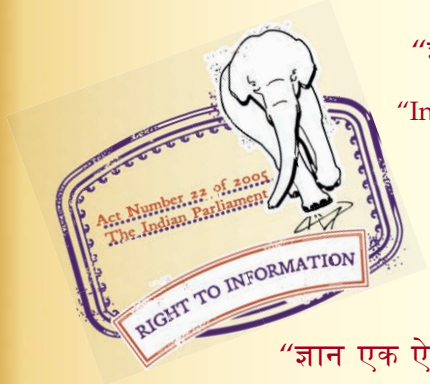
## Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 594 (1981): Specification fo Common salt for fish curing [FAD 8: Food Additives]




"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"


"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE


IS : 594 - 1981
(Reaffirmed 2004)

# *Indian Standard*

# SPECIFICATION FOR COMMON SALT FOR FISH CURING

## *( Second Revision )*

UDC 661·833·321 : 664·951·2



**INDIAN STANDARDS INSTITUTION**
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

*Price* Rs 7·00

*January* 1982

# *Indian Standard*

# SPECIFICATION FOR COMMON SALT FOR FISH CURING

# *( Second Revision )*

Acids, Alkalis and Halides Sectional Committee, CDC 56

| *Chairman* | *Representing* |
|---|---|
| PROF K. S. RAO | Central Salt & Marine Chemicals Research Institute, Bhavnagar |
| *Members* | |
| DR J. R. SANGHAVI ( *Alternate* to Prof K. S. Rao ) | |
| SHRI S. K. BASU | Directorate General of Supplies and Disposals, New Delhi |
| SHRI D. S. CHOWDHURY ( *Alternate* ) | |
| SHRI M. L. BHAMBANI | National Test House, Calcutta |
| SHRI R. C. BHATACHARYA | Directorate General of Technical Development, New Delhi |
| SHRI H. KHAPARDE ( *Alternate* ) | |
| SHRI P. S. HARIHARAKRISHNAN | The Travancore Rayons Ltd, Rayonpuram |
| SHRI B. N. LAHIRI | Salt Commissioner, Govt of India, Jaipur |
| SHRI A. S. NATARAJAN | Standard Alkali, Chemicals Division, Bombay |
| SHRI T. P. VENAKATRAMAN ( *Alternate* ) | |
| SHRI M. PADMANABAN | The Mettur Chemical & Industrial Corporation Ltd, Mettur Dam |
| SHRI ASHOK PAREKH | Gwalior Rayon Silk Mfg ( Wvg ) Co Ltd, Nagda |
| SHRI M. K. MAHESHWARI ( *Alternate* ) | |
| SHRI N. S. PARTHASARTHY | E. I. D.-Parry ( India ) Ltd, Madras |
| SHRI A. G. KRIPAL SINGH ( *Alternate* ) | |
| SHRI A. K. RAO | D. C. M. Chemical Works, New Delhi |
| SHRI D. V. N. SASTRY ( *Alternate* ) | |
| SHRI V. N. RAO | Tata Chemicals Ltd, Bombay |
| SHRI R. K. GANDHI ( *Alternate* ) | |
| SHRI P. RAO | Bengal Chemicals & Pharmaceuticals Ltd, Calcutta |
| SHRI R. K. CHATTERJEE ( *Alternate* ) | |
| SHRI N. K. SACHAR | Gujarat Alkalies and Chemicals Ltd, Vadodara |
| SHRI J. B. SHARMA ( *Alternate* ) | |
| SHRI C. R. SANTHANAKRISHNAN | Travancore Chemical & Mfg Co Ltd, Mettur Dam |
| SHRI K. V. MANI ( *Alternate* ) | |

( *Continued on page* 2 )

( *Continued from page* 1 )

| *Members* | *Representing* |
|---|---|
| SHRI V. S. SAXENA | Ballarpur Industries Ltd, New Delhi |
| SHRI R. C. SINHA ( *Alternate* ) | |
| DR N. SEN | Indian Soap and Toiletries Makers' Association, Bombay |
| SHRI S. K. SUBBAROYAN | Hindustan Lever Ltd, Bombay |
| DR A. N. BHAT ( *Alternate* ) | |
| SHRI J. N. TAWAKLEY | Indian Dyestuff Industries Ltd, Bombay |
| SHRI N. R. FADNIS ( *Alternate* ) | |
| SHRI S. S. THAKUR | Indian Paper Mills Association, Calcutta |
| SHRI N. K. GUPTA ( *Alternate* ) | |
| DR M. S. VAIDYA | Dharamsi Morarji Chemical Co Ltd, Bombay |
| SHRI H. K. VENKATARAMAIAH | Hindustan Organic Chemicals Ltd, Rasayani |
| DR K. M. VERMA | Fertilizer ( Planning and Development ) India Ltd, Sindri |
| SHRI B. R. WALAVALKAR | Saurashtra Chemicals, Porbandar |
| SHRI L. K. MALAVIYA ( *Alternate* ) | |
| DR HARI BHAGWAN, Director ( Chem ) | Director General, ISI ( *Ex-officio Member* ) |

*Secretary*

SHRI S. K. MATHUR
Deputy Director ( Chem ), ISI

## Common Salt and Marine Chemicals Subcommittee, CDC 56 : 4

*Convener*

| | |
|---|---|
| SHRI R. M. SHAH | Tata Chemicals Ltd, Mithapur |

*Members*

| | |
|---|---|
| SHRI G. J. GOSWAMY ( *Alternate* to Shri R. M. Shah ) | |
| SHRI T. N. BALAKRISHNAN | Mettur Chemicals & Industrial Corporation Ltd, Mettur Dam |
| SHRI D. S. CHADHA | Central Committee for Food Standards ( Directorate General of Health Services ), New Delhi |
| SMT DEBI MUKHERJEE ( *Alternate* ) | |
| SHRI M. V. DESAI | The Atul Products Ltd, Atul |
| DR J. M. TUREL ( *Alternate* ) | |
| DR M. J. MEHTA | Central Salt & Marine Chemicals Research Institute ( CSIR ), Bhavnagar |
| DR J. R. SANGHAVI ( *Alternate* ) | |
| DR S. K. SAGAR | Shri Ram Chemical Industries, Kota |
| SHRI RAJIV SINHA ( *Alternate* ) | |
| SHRI K. L. SAHNI | Salt Commissioner, Jaipur |
| SHRI D. V. KIRTIKAR ( *Alternate* ) | |
| SHRI G. P. THACKER | Indian Salt Mfrs' Association, Bombay |
| SHRI DHIRAJLAL G. SHAH ( *Alternate* ) | |
| SHRI T. P. VENKATRAMAN | Standard Alkali, Bombay |
| SHRI B. R. WALAVALKAR | Saurashtra Chemicals, Porbander |
| SHRI L. K. MALAVIYA ( *Alternate* ) | |

# *Indian Standard*

# SPECIFICATION FOR COMMON SALT FOR FISH CURING

# *( Second Revision )*

## 0. FOREWORD

**0.1** This Indian Standard ( Second Revision ) was adopted by the Indian Standards Institution on 1 October 1981, after the draft finalized by the Acids, Alkalis and Halides Sectional Committee had been approved by the Chemical Division Council.

**0.2** The specification for fish curing salt was first issued in 1954 and subsequently revised in 1962. In the present revision, two grades have been specified. Additional requirements for iron, matter soluble in water other than sodium chloride and copper along with their methods of test have been incorporated. The method for the determination of calcium and magnesium has also been modified.

**0.3** The main function of common salt in curing fishes is dehydration and deactivation of enzymes.

**0.4** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

## 1. SCOPE

**1.1** This standard prescribes the requirements and the methods of sampling and test for common salt for fish curing.

## 2. GRADES

**2.1** The material shall be of two grades, namely, Grade 1 and Grade 2.

*Rules for rounding off numerical values ( *revised* ).

## 3. REQUIREMENTS

**3.1 Description** — The material shall be crystalline, white, pale pink or light grey in colour, free from visible contamination with clay, grit and other extraneous adulterants and impurities.

### 3.2 Particle Size

**3.2.1** The material shall be between 2·36 mm and 5·00 mm in size.

**3.3 Moisture Content** — Unless otherwise agreed to between the purchaser and the supplier, the moisture content of the material shall be not more than 6·0 percent by mass, when tested according to the method prescribed in Appendix A.

**3.4** The material shall also comply with the requirements ( on dry basis ) given in Table 1, when tested according to the methods prescribed in Appendix A. Reference to the relevant clauses of Appendix A is given in col 5 of the table.

**TABLE 1 REQUIREMENTS OF COMMON SALT FOR FISH CURING**

| Sl No. | Characteristic | Requirement | | Method of Test ( Ref to Cl No. in Appendix A ) |
|---|---|---|---|---|
| | | Grade 1 | Grade 2 | |
| (1) | (2) | (3) | (4) | (5) |
| i) | Matter insoluble in water, percent by mass, *Max* | 0·5 | 1·0 | A-3 |
| ii) | Sodium chloride ( as NaCl ), percent by mass, *Min* | 98·0 | 96·0 | A-4 |
| iii) | Calcium and magnesium ( as Ca ), percent by mass, *Max* | 0·5 | — | A-5 |
| iv) | Soluble iron compounds ( as Fe ), parts per million, *Max* | 10 | 20 | A-6 |
| v) | Matter soluble in water other than NaCl, percent by mass, *Max* | 1·5 | 3·0 | A-7 |
| vi) | Copper ( as Cu ), parts per million, *Max* | 1 | 1 | A-8 |

## 4. PACKING AND MARKING

**4.1 Packing** — The material shall be supplied in bulk or in packages as agreed to between the purchaser and the supplier.

## 4.2 Marking

**4.2.1** The packages shall be securely closed and marked with the following information:

a) Name and grade of the material;

b) Net mass;

c) Name of the manufacturer and/or recognized trade-mark, if any;

d) Batch number; and

e) Date of packing.

**4.2.2** The packages may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for comformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

## 5. SAMPLING

**5.1** Representative samples of the materials shall be drawn and their criteria for conformity shall be determined in accordance with the methods prescribed in Appendix B.

# APPENDIX A

( *Clauses* 3.3 *and* 3.4 )

## ANALYSIS OF COMMON SALT FOR FISH CURING

## A-1. QUALITY OF REAGENTS

**A-1.1** Unless specified otherwise, pure chemicals and distilled water ( *see* IS : 1070-1977* ) shall be used in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

## A-2. DETERMINATION OF MOISTURE CONTENT

### A-2.1 Procedure

**A-2.1.1** Grind rapidly the material, as received ( *say* 100 g ), in an agate mortar approximately to a size of 1·0 mm IS sieve, but do not

*Specification for water, for general laboratory use ( *second revision* ).

actually sieve. The material which shall be in the form of powder, shall be kept in an air-tight container.

**A-2.1.2** Weigh accurately about 20 g of the material in the weighing bottle ( about 30 ml capacity ), preferably wide mouth squat type, previously dried and weighed. Dry in an oven at 140 to 150°C for at least 4 h. Cool in a desiccator and weigh. Repeat drying, cooling and weighing until constant mass is obtained.

**A-2.2 Calculation**

$$\text{Moisture, percent by mass} = \frac{M_1 - M_2}{M_1} \times 100$$

where

$M_1$ = initial mass in g of the material taken for the test, and

$M_2$ = final mass in g of the material taken for the test.

## A-3. DETERMINATION OF MATTER INSOLUBLE IN WATER

**A-3.1 Preparation of the Sample for Chemical Tests** — Spread 80 to 100 g of the ground material ( **A-2.1.1** ) in a petri dish and dry by the method given in **A-2.1.2.** The dried material shall be called the dried sample and shall be used in the tests where so indicated.

**A-3.2 Procedure** — Accurately weigh about 20 g of the dried sample, dissolve it in 200 ml of water in a beaker, heat to boiling and cool. Filter the solution through a weighed Gooch or sintered glass crucible ( G No. 4 ) and wash the residue till it is free from soluble salts. Collect the filtrate and washings in a 1-litre graduated flask and dilute to the mark. Preserve the solution so obtained for subsequent tests. Dry the crucible along with the insoluble residue to constant mass.

**A-3.3 Calculation**

$$\text{Matter insoluble in water, percent by mass} = \frac{M_1}{M_2} \times 100$$

where

$M_1$ = mass in g of the residue, and

$M_2$ = mass in g of the dried sample taken for the test.

## A-4. DETERMINATION OF SODIUM CHLORIDE

**A-4.1 Reagents**

**A-4.1.1** *Potassium Chromate Indicator Solution* — 5 percent.

**A-4.1.2** *Standard Silver Nitrate Solution* — 0·1 N.

**A-4.2 Procedure** — Transfer 10 ml of the solution reserved in **A-3.2** into a conical flask and add 1 ml potassium chromate indicator solution. Titrate against standard silver nitrate solution till the reddish brown tinge persists after brisk shaking. Carry out a blank determination.

**A-4.3 Calculation**

$$\text{Sodium chloride ( as NaCl ), percent by mass} = 584{\cdot}5 \frac{V\mathcal{N}}{M}$$

where

$V$ = volume in ml of standard silver nitrate solution used in the titration with the material, corrected for blank;

$\mathcal{N}$ = normality of standard silver nitrate solution; and

$M$ = mass in g of the dried sample taken for the test in **A-3.2.**

## A-5. DETERMINATION OF CALCIUM AND MAGNESIUM

### A-5.1 Reagents

**A-5.1.1** *Standard Calcium Solution* — Weigh 1·000 g of calcium carbonate dried at 120°C and dissolve it in the minimum quantity of dilute hydrochloric acid. Dilute the solution to 1 litre in a graduated flask. One millilitre of the solution is equivalent to 0·400 8 mg of calcium ( as Ca ).

**A-5.1.2** *Standard EDTA Solution* — Dissolve 3·72 g of disodium ethylene diamine tetraacetate dehydrate in water and dilute in a graduated flask to 1 litre. The solution shall be standardized frequently against standard calcium solution following the procedure given in **A-5.2.**

**A-5.1.3** *Eriochrome Black T Indicator Solution* — Dissolve 0·1 g of the dye in 20 ml of rectified spirit ( *see* IS : 323-1959* ). This solution shall be prepared fresh every week.

**A-5.1.4** *Ammonium Chloride-Ammonium Hydroxide Buffer Solution* — Dissolve 67·5 g of ammonium chloride in a mixture of 570 ml of ammonium hydroxide ( relative density 0·90 ) and 250 ml of water. Also dissolve separately a mixture of 0·931 g of disodium ethylene diamine tetraacetate dehydrate and 0·616 g of magnesium sulphate ( $MgSO_4.7H_2O$ ) in about 50 ml of water. Mix the two solutions and dilute to 1 litre.

*Specification for rectified spirit ( *revised* ).

NOTE — Five millilitres of buffer solution added to 50 ml of water should not consume more than a drop of EDTA solution to change to distinct blue with eriochrome black T indicator.

### A-5.2 Procedure

**A-5.2.1** *Standardization of EDTA Solution* — Transfer 25 ml of standard calcium solution into a conical flask, add 25 ml of water, 10 ml of ammonium chloride-ammonium hydroxide buffer solution, 5 drops of the eriochrome black T indicator solution and titrate against the standard EDTA solution to a pure blue end point.

**A-5.2.2** Titrate 25 ml of the buffer solution with EDTA solution using eriochrome black T indicator. Subtract the buffer correction for 10 ml ( usually it will be 0·1 ml ) from the reading obtained in **A-6.2.1** and note the final titre value. Calculate the calcium equivalent of 1 ml of EDTA solution ( say A ).

**A-5.2.2.1** Transfer exactly 100 ml of the solution preserved in **A-3.2** into a 250-ml conical flask. Add 10 ml of ammonium chloride-ammonium hydroxide buffer solution, 5 drops of eriochrome black T indicator solution and titrate against standard EDTA solution till wine red colour of the solution changes to pure blue end point. Note the volume of EDTA solution used in the titration.

### A-5.3 Calculation

$$\text{Calcium and magnesium as ( Ca ), percent by mass} = \frac{AV}{M}$$

where

$A$ = calcium equivalent in mg of 1 ml of EDTA solution determined in **A-5.2.2**,

$V$ = volume in ml of standard EDTA solution used in **A-5.2.2.1**, and

$M$ = mass in g of the dried material taken for the test in **A-3.2**.

## A-6. DETERMINATION OF SOLUBLE IRON COMPOUNDS

### A-6.1 Apparatus

**A-6.1.1** *Nessler Cylinders* — 50 ml capacity.

### A-6.2 Reagents

**A-6.2.1** *Concentrated Nitric Acid — see* IS : 264-1976*.

*Specification for nitric acid ( *second revision* ).

**A-6.2.2** *Ammonium Persulphate* — solid.

**A-6.2.3** *Butanolic Potassium Thiocyanate* — Dissolve 10 g of potassium thiocyanate in 10 ml of water. Add sufficient *n*-butanol to make up to 100 ml and shake vigorously until the solution is clear.

**A-6.2.4** *Dilute Sulphuric Acid* — approximately 10 percent ( *v/v* ).

**A-6.2.5** *Standard Iron Solution* — Weigh 0·702 g of ferrous ammonium sulphate [ $FeSO_4(NH_4)_2SO_4.6H_2O$ ] and dissolve in 10 ml of dilute sulphuric acid. Dilute with water to make up the volume to 1 000 ml. Pipette out 10 ml of this solution and again dilute with water to 100 ml. One millilitre of this solution is equivalent to 0·01 mg of iron ( as Fe ).

**A-6.3 Procedure** — Weigh accurately about 1 g of the prepared sample, dissolve it in water and make up the valume to 100 ml. Pipette out exactly 10 ml of this solution into a beaker, and 1 ml of nitric acid and boil. Cool, transfer the solution to a Nessler cylinder and add 30 mg of ammonium persulphate and 15 ml of butanolic potassium thiocyanate solution. Shake vigorously for 30 seconds and allow the liquid to separate. Carry out a control test in the other Nessler cylinder, adding slowly from a burette a quantity of the standard iron solution in place of the material and the same quantities of other reagents in the same total volume of the reaction mixture until the colours of butanol layer in the two cylinders are exactly matched.

**A-6.4 Calculation**

$$\text{Iron ( as Fe ), percent by mass} = \frac{0{\cdot}01\ V}{M}$$

where

$V$ = volume in ml of standard iron solution required in the control test, and

$M$ = mass in g of the material taken for the test.

## A-7. CALCULATION

**A-7.1** Calculate the soluble carbonate as calcium carbonate ( marine salt ), or as sodium carbonate ( Rajasthan salt ) in the absence of calcium and magnesium. If there is excess of calcium and magnesium expressed as calcium, combine all the calcium as calcium chloride. Then, matter soluble in water other than sodium chloride = 100 — insoluble water — NaCl equivalent to $CaCl_2$.

## A-8. DETERMINATION OF COPPER

**A-8.0 Outline of the Method** — The yellow colour obtained with diethyldithiocarbamate in ammoniacal solution is matched against those produced with a series of standard copper solutions.

## A-8.1 Apparatus

**A-8.1.0** All glassware to be used in the test shall first be rinsed with concentrated hydrochloric acid and then with redistilled water ( *see* **8.2.1** ).

## A-8.2 Reagents

**A-8.2.1** *Redistilled Water* — Water redistilled from an all-glass pyrex still.

**A-8.2.2** *Dilute Ammonium Hydroxide* — 1 : 5 ( *v/v* ).

**A-8.2.3** *Diethyldithiocarbamate Solution* — Dissolve 1 g of sodium diethyldithiocarbamate in 1 litre of redistilled water. A brown bottle is recommended for the solution. The reagent becomes turbid in approximately a month. A reagent which has become coloured should be discarded but slight turbidity may be tolerated.

**A-8.2.4** *Standard Copper Solution* — Weigh 0·10 g of copper metal foil, place in a 250-ml beaker under a hood, add 3 ml of redistilled water and 3 ml of concentrated nitric acid, and cover the beaker with a watch-glass. After the entire metal has dissolved, add 1 ml of concentrated sulphuric acid and heat on a hot-plate to volatilize the acids. Stop heating just short of complete dryness; do not bake the residue. Cool and dissolve in redistilled water, washing down the sides of the beaker and the bottom of the watch-glass. Transfer quantitatively to a 1-litre volumetric flask and make up to the mark with redistilled water. Quantitatively dilute 50 ml of the solution to 1 litre with redistilled water. One millilitre of this solution contains 0·005 mg of copper ( as Cu ). This solution is very stable.

**A-8.3 Procedure** — To 100 ml of the sample, or an aliquot diluted to 100 ml with redistilled water, taken in a Nessler cylinder, add 5 ml of dilute ammonium hydroxide and 5 ml of diethyldithiocarbamate solution. Mix by inverting the tube twice. Simultaneously, take in a series of Nessler cylinders, 0·0, 1·0, 2·0, 4·0, 8·0, 12·0, 16·0 and 20·0 ml of standard copper solution, dilute to 100 ml with redistilled water and treat as described above for the sample. Compare the yellow colour obtained with the sample with that obtained with the standards after 5 min but within 1 h of mixing.

NOTE — Extraction procedures have been recommended by various authors. Carbon tetrachloride and isoamyl alcohol have been used for extracting and thereby to intensify the colour and/or to eliminate turbidity. The solvents are added after the colour has developed. The mixtures are then shaken to cause the colour to pass into the organic layer. Care shall be taken that the solvents themselves do not contain traces of metals. It is desirable to acidify the aqueous solution immediately prior to the extraction which is slow from an alkaline solution.

**A-8.4 Calculation**

$$\text{Copper ( as Cu ), parts per million} = 1\,000\,\frac{M}{V}$$

where

$M$ = mass in mg of copper present in the standard which matches the colour obtained with the sample, and

$V$ = volume in ml of the sample taken for the test.

# APPENDIX B

( *Clause* 5.1 )

## SAMPLING OF COMMON SALT FOR FISH CURING

### B-1. GENERAL REQUIREMENTS OF SAMPLING

**B-1.0** In drawing, storing, preparing and handling test samples, the following precautions shall be observed.

**B-1.1** Samples shall not be taken at a place exposed to weather.

**B-1.2** Precautions shall be taken to protect the samples, the sampling instrument and the containers for samples from adventitious contamination.

**B-1.3** To draw a representative sample, the contents of each container selected for sampling shall be mixed thoroughly by suitable means.

**B-1.4** The samples shall be placed in suitable, clean, dry and air-tight glass containers.

**B-1.5** Each sample container shall be sealed air-tight after filling and marked with full details of sampling, the date of sampling and year of manufacture.

### B-2. SCALE OF SAMPLING

**B-2.1 Lot** — All the packages in a single consignment of common salt for fish-curing drawn from a single batch of manufacture shall constitute a lot. If the consignment is declared to consist of different batches, the batches shall be marked separately and the group of containers in each batch shall constitute separate lots.

**B-2.1.1** The number of packages ($n$) to be selected from the lot shall depend upon the size of the lot ($N$) and shall be in accordance with Table 2.

**TABLE 2 NUMBER OF PACKAGES TO BE SELECTED FOR SAMPLING**

( *Clause* B-2.1.1 )

| LOT SIZE | NO. OF PACKAGES TO BE SELECTED |
|---|---|
| (*N*) | (*n*) |
| Up to 50 | 3 |
| 51 ,, 100 | 4 |
| 101 ,, 150 | 5 |
| 151 ,, 300 | 7 |
| 301 and above | 10 |

**B-2.1.2** These packages shall be selected at random from the lot. In order to ensure the randomness of selection, random sampling procedures given in IS : 4905-1968* may be followed.

**B-2.1.3** Samples shall be tested for each lot for ascertaining conformity of the material to the requirements of this specification.

## B-3. PREPARATION OF TEST SAMPLES

### B-3.1 Packages

**B-3.1.1** From each of the packages selected according to **B-2.1.2**, a portion of material about 750 g shall be drawn with the help of a suitable sampling instrument.

**B-3.1.2** Out of these portions, equal quantities of the material shall be taken and mixed thorougly to form a composite sample of about 2 kg. The composite sample shall be divided into three equal parts, one for the purchaser, one for the supplier and the third to be used as a referee sample.

**B-3.1.3** The remaining portion of the material from each container shall be divided into three equal parts, each forming an individual sample. One set of individual samples representing *n* containers sampled shall be marked for the purchaser, another for the supplier and the third to be used as a referee sample.

**B-3.2** All the individual samples and the composite sample shall be transferred to separate sample containers. All the containers shall be sealed and labelled with full identification particulars.

*Methods for random sampling.

**B-3.3** The referee test samples consisting of composite sample and a set of individual samples shall bear the seal of both the purchaser and the supplier. They shall be kept at a place agreed to between the purchaser and the supplier, to be used in case of dispute between the two.

## B-4. NUMBER OF TESTS

**B-4.1** For matter insoluble in water and sodium chloride, tests shall be performed on each of the individual samples.

**B-4.2** Tests for the determination of all other characteristics given under **3** shall be performed on the composite sample ( *see* **B-3.1.2** ).

## B-5. CRITERIA FOR CONFORMITY

**B-5.1 For Individual Samples** — From the test results, the mean ($\bar{X}$) and the range ($R$) shall be computed for each of the characteristics tested on individual samples ( the range being defined as the difference between the maximum and minimum values of the test results ). The appropriate expression as shown in col 5 of Table 3 shall be calculated for these characteristics. If the values of the expressions satisfy the conditions an given in col 5 of Table 3, the lot shall be declared to have satisfied the requirements for these characteristics.

**B-5.2 For Composite Sample** — The lot shall be considered to have passed in respect of the characteristics tested on the composite test sample if the test results satisfy the corresponding requirements given in **3**.

**B-5.3** The lot shall be considered as conforming to the specification if it satisfies all the criteria given in **B-5.1** and **B-5.2**.

**TABLE 3 CRITERIA FOR CONFORMITY BASED ON INDIVIDUAL SAMPLES**

( *Clause* B-5.1 )

| Sl No. | Characteristic | Average of Test Results 1, 2, 3. . . | Range | Criterion for Conformity |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| i) | Sodium chloride content | $\bar{X}_2$ | $R_2$ | ( $\bar{X}_2 - 0{\cdot}6\,R_2$ ) shall be greater than or equal to 98·0 or 96·0. |
| ii) | Matter insoluble in water | $\bar{X}_3$ | $R_3$ | ( $\bar{X}_3 + 0{\cdot}6\,R_3$ ) shall be less than or equal to 0·5. |

# INTERNATIONAL SYSTEM OF UNITS ( SI UNITS )

**Base Units**

| Quantity | Unit | Symbol |
|---|---|---|
| Length | metre | m |
| Mass | kilogram | kg |
| Time | second | s |
| Electric current | ampere | A |
| Thermodynamic temperature | kelvin | K |
| Luminous intensity | candela | cd |
| Amount of substance | mole | mol |

**Supplementary Units**

| Quantity | Unit | Symbol |
|---|---|---|
| Plane angle | radian | rad |
| Solid angle | steradian | sr |

**Derived Units**

| Quantity | Unit | Symbol | Definition |
|---|---|---|---|
| Force | newton | N | 1 N = 1 kg.m/s$^2$ |
| Energy | joule | J | 1 J = 1 N.m |
| Power | watt | W | 1 W = 1 J/s |
| Flux | weber | Wb | 1 Wb = 1 V.s |
| Flux density | tesla | T | 1 T = 1 Wb/m$^2$ |
| Frequency | hertz | Hz | 1 Hz = 1 c/s (s$^{-1}$) |
| Electric conductance | siemens | S | 1 S = 1 A/V |
| Electromotive force | volt | V | 1 V = 1 W/A |
| Pressure, stress | pascal | Pa | 1 Pa = 1 N/m$^2$ |

# PUBLICATIONS OF INDIAN STANDARDS INSTITUTION

## INDIAN STANDARDS

Over 10 000 Indian Standards covering various subjects have been issued so far. Of these, the standards belonging to the Chemical Group fall under the following categories:

- Acids
- Adhesives
- Alcohols and allied products
- Alkalis
- Brushware
- Ceramicware, enamelware and laboratory porcelain
- Chemical hazards and safety
- Chemicals, inorganic ( miscellaneous )
- Chemicals, organic ( miscellaneous )
- Coal and coke
- Coal carbonization products
- Coated fabrics
- Cosmetics and toilet goods
- Dental materials
- Drying oils
- Dye intermediates
- Electroplating chemicals
- Explosive and pyrotechnic materials
- Fertilizers
- Fillers, stoppers and putties
- Footwear
- Glass and glassware
- Industrial gases
- Inks and allied products
- Laboratory glassware thermometers and related apparatus
- Lac and lac products
- Leather, leather goods and leather dressings
- Linters and allied products
- Lubricants and related products
- Oil pastes
- Oils and fats, oleaginous seeds and fruits
- Painters' materials ( miscellaneous )
- Paper and its products
- Paper and pulp board packaging materials
- Perfumery materials, natural and synthetic
- Petroleum and petroleum products
- Photographic chemicals
- Pigments and extenders
- Plastics
- Polishes
- Printing inks
- Ready mixed paints and enamels
- Rubber and rubber products
- Soaps and other surface active agents
- Tanning materials and allied products
- Thermal insulation materials
- Thinners and solvents
- Varnishes and lacquers
- Water and water treatment
- Water based paints
- Unclassified

## OTHER PUBLICATIONS

| | |
|---|---|
| ISI Bulletin ( Published Every Month ) | |
| Single Copy | Rs 4·00 |
| Annual Subscription | Rs 36·00 |
| Standards : Monthly Additions | |
| Single Copy | Re 0·30 |
| Annual Subscription | Rs 3·00 |
| Annual Reports ( from 1248-49 Onwards ) | Rs 2·00 to 7·00 |
| ISI Handbook, 1980 | Rs 100·00 |


**INDIAN STANDARDS INSTITUTION**

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

**Telephones : 26 60 21, 27 01 31** **Telegrams : Manaksanstha**

| *Regional Offices* : | | Telephone |
|---|---|---|
| Western : Novelty Chambers, Grant Road | BOMBAY 400007 | 37 97 29 |
| Eastern : 5 Chowringhee Approach | CALCUTTA 700072 | 27 50 90 |
| Southern : C. I. T. Campus, Adyar | MADRAS 600020 | 41 24 42 |
| Northern : B69, Phase VII | S.A.S. NAGAR ( MOHALI ) 160051 | — |
| *Branch Offices*: | | |
| 'Pushpak' Nurmohamed Shaikh Marg, Khanpur | AHMADABAD 380001 | 2 03 91 |
| 'F' Block, Unity Bldg, Narasimharaja Square | BANGALORE 560002 | 2 76 49 |
| Gangotri Complex, Bhadbhada Road, T.T. Nagar | BHOPAL 462003 | 6 27 16 |
| 22E Kalpana Area | BHUBANESHWAR 751014 | 5 36 27 |
| 5-8-56C L. N. Gupta Marg | HYDERABAD 500001 | 22 10 83 |
| R 14 Yudhister Marg, C Scheme | JAIPUR 302005 | 6 98 32 |
| 117/418 B Sarvodaya Nagar | KANPUR 208005 | 4 72 92 |
| Patliputra Industrial Estate | PATNA 800013 | 6 28 08 |
| Hantex Bldg ( 2nd Floor ), Rly Station Road | TRIVANDRUM 695001 | 3227 |



Printed at Printograph, New Delhi, India

AMENDMENT NO. 1 APRIL 1985

TO

IS:594-1981 SPECIFICATION FOR COMMON SALT FOR FISH CURING

*(Second Revision)*

[*Page 13, Table 3, Sl No.*(i), *col 5*] - Add 'for Grade 1' after '98.0' and 'for Grade 2' after '96.0'.

[*Page 13, Table 3, Sl No.*(ii), *col 5*] - Add 'for Grade 1 and 1.0 for Grade 2' at the end.

(CDC 56)

Reprography Unit, ISI, New Delhi, India